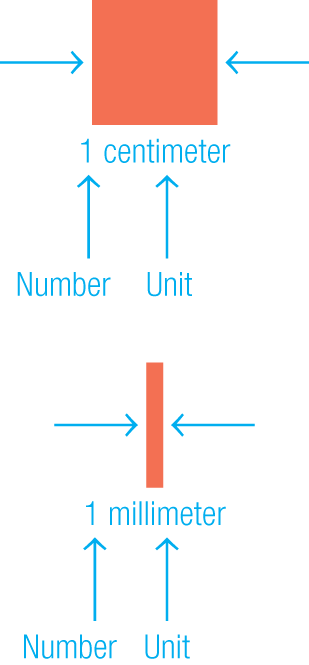
**Lesson Six: “***Scientific Notation – Units of Measurement”*

**Units of Measurement**

Measurement: *“a figure, extent, or amount obtained by measuring”*

* A quantitative observation
* Consists of two parts :
  1. Number
  2. Unit – tells the scale being used

Units:

* Units provide a scale on which to represent the results of a measurement.



**TEACHER NOTE:**

Ask students what units they can think of

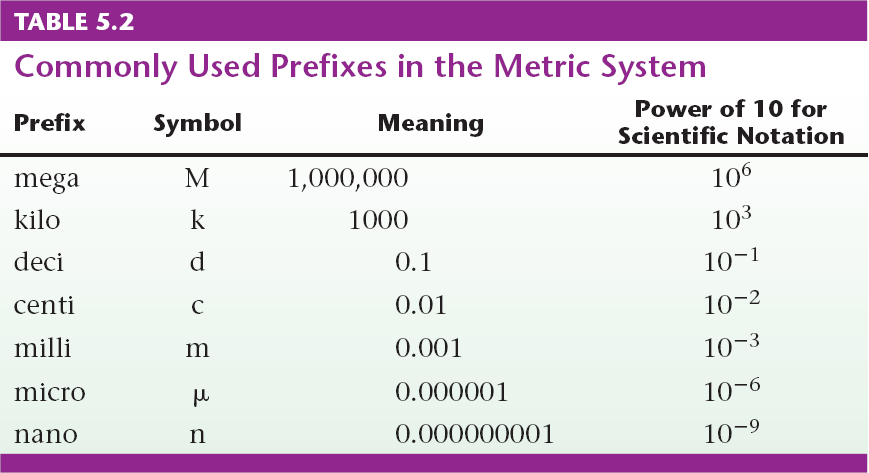
2 Systems of Measurement in Use:

Scientists use this system!!!

|  |  |
| --- | --- |
| **English** | Yards, Gallons, Miles, Feet… |
| **Metric** | Meters, Liters, Kilometers… |

Note: The United States is the only major country that still uses the English system.

Prefixes are used to denote different sizes of each unit:



|  |  |
| --- | --- |
| **Multiplication Factor**  *(Scientific Notation)* | **Prefix** |
| (1024) | yotta |
| (1021) | zetta |
| (1018) | exa |
| (1015) | peta |
| (1012) | tera |
| 1 000 000 000 (109) | giga |
| 1 000 000 (106) | mega |
| 1000 (103) | kilo |
| 100 (102) | hecto |
| 10 (101) | deka |
| 0.1 (10-1) | deci |
| 0.01 (10-2) | centi |
| 0.001 (10-3) | milli |
| 0.000 001 (10-6) | micro |
| 0.000 000 001 (10-9) | nano |
| (10-12) | pico |
| (10-15) | femto |
| (10-18) | atto |
| (10-21) | zepto |
| (10-24) | yocto |

**Metric Dollars:**



1 cent

1 centidollar

1X10-2

1 dime

1 decidollar

1X10-1

1 dollar

1 dollar

1x100

10 dollars

1 dekadollar

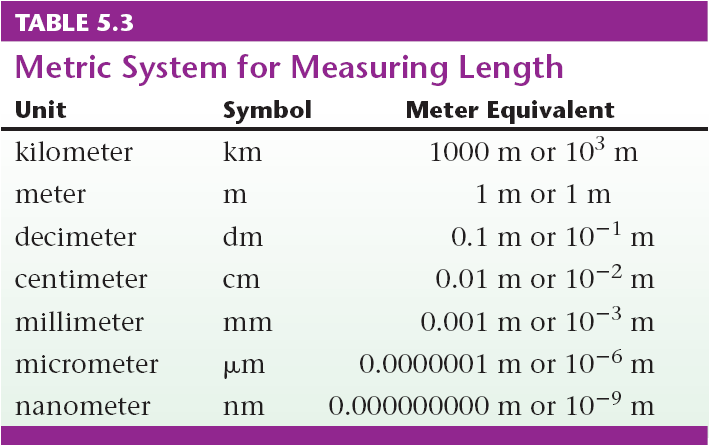
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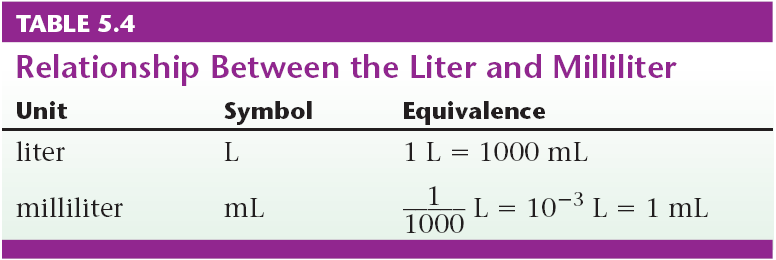
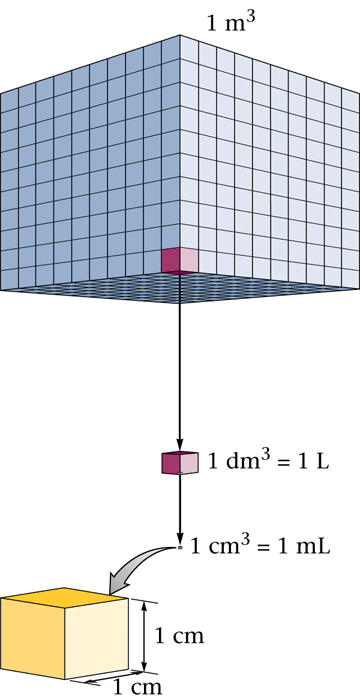
100 dollars

1 hectodollar

1x102

Measurements of Length, Volume & Mass:

* Length
  + Fundamental unit is the meter
  + 1 meter = 39.37 inches
* Volume



* + Amount of 3-D space occupied by a substance
  + Fundamental unit is meter3 (m3)
* Mass
  + Quantity of matter in an object
  + Fundamental unit is kilogram = 2.2 lbs

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Examples of Commonly Used Units:

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**Units of Measurement:** Scientific Notation

**GOAL**: Convert measurements into scientific notation, using the appropriate units of measurements.

Example:

While researching for your project you discover that the average height of males living in Argentina is 5ft 8.5in. However, your research criteria requires that you present your measurements in scientific notation with metric units.

**Step 1**: Change from English to Metric Units

1ft = 12 in

1 in = 0.0254 m

5ft 8.5 in ⇒ 68.5 in

(68.5in x 0.0254m) = 1.7399m = 173.99 cm

**Step 2**: Write Your Answer in Scientific Notation

1.7399 x 100 meters or 1.7399 x 102 centimeters